REMARKS

Claims 1-22 are pending. Claims 1, 10, 11 and 19-22 were rejected. Applicant notes with appreciation the allowance of claims 2-9 and the provisional allowance of claims 12-18. Reconsideration of the application is respectfully requested in light of the following discussion.

I.   REJECTION OF CLAIMS 1, 10-11, AND 19-22 UNDER 35 U.S.C. § 103(a)

Claims 1, 10-11, and 19-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Figure 5 and Figure 6 of the admitted prior art (APA). Withdrawal of the rejection is respectfully requested for at least the following reasons.

i.   *APA does not teach or suggest a control system connected to a first system and to a second system gradually switching from a pilot-based phase and frequency tracking to a data based-phase and frequency tracking, as provided in claims 1, 10, 11, 20 and 21.*

Claim 1 of the present invention relates to a tracking system comprising a first system performing a pilot-based phase and frequency tracking, a second system performing a data-based phase and frequency tracking, and a control system connected to said first system and to said second system gradually switching from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking.

The Office Action admits that Figure 6 does not disclose a control system gradually switching from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking, as recited in claim 1. (*See*, p. 4, lns. 7-9). However, the Office Action states that the combination of frequency correction block 10, FFT block 12, and phase correction block 22 in admitted prior art Fig. 6 is equated to the first system of claim 1, that the combination of demodulation block 14, error correction block 16, re-modulation block 20 and frequency estimation block 18 is equated to the second system of claim 1, and the pilot-based phase estimation block 24 is equated to the control system of claim 1. (*See*, pg. 5, lns. 1-5). However, applicant

respectfully disagrees with the characterization that the pilot-based phase estimation block 24 is the control system provided in the claims.

The pilot-based phase estimation block 24 of Fig. 6 is not operable to gradually switch between pilot-based phase and frequency tracking to data-based frequency tracking, as recited in claims 1, 10, 11, 20 and 21. For example, paragraph 0020 of applicant's specification teaches what the phase estimation block 24 is able to perform by stating that "the pilot-based phase estimation block extracts the pilot subcarriers from the data stream, and use[s] [sic] them to calculate an estimate of the phase rotation for a current OFDM symbol." Consequently, the pilot-based phase estimation block 24 is not connected with data-based phase and frequency tracking, and thus, can not be equated with the control system of claim 1 that is connected to the first and second system gradually switching between pilot-based phase and frequency tracking to data-based frequency tracking. In particular, the pilot-based phase estimation block 24 is not able to gradually switch from pilot-based phase and frequency tracking to data-based phase and frequency tracking because the pilot-based phase estimation block 24 does not perform any data-based phase and frequency estimation, nor does it control any unit that performs data-based phase and frequency estimation. Therefore, the assertion in the Office Action that the pilot-based phase estimation block 24 reads on the claimed control system is incorrect.

Further, as conceded in the Office Action, APA does not disclose a control system gradually switching from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking, as recited in the claims. ***Additionally, APA does not inherently teach or suggest such features to render the claims obvious.*** "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness." MPEP § 2112 (*citing* In re Napier, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). To establish inherency, the extrinsic evidence "**must make clear that the missing descriptive matter is necessarily present in the thing described in the reference**, and that it would be so

recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." MPEP § 2112 (*citing* In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)). In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. MPEP § 2112 (*citing* Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)). ***There is no teaching or suggestion in APA that a control system gradually switches from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking, as recited in claim 1.*** For example, APA teaches that the pilot-based phase estimation block (24) is a part of a pilot-based phase and frequency tracking architecture (para. 0020, first sentence; Fig. 5), which is also what the name of the block (24) implies as a "pilot-based" block 24. Therefore, block 24 being connected to a data-driven phase and frequency architecture, which is a separate architecture illustrated in Fig. 4, ***in addition to being connected to a pilot-based architecture is not implied in the teachings of APA***. In fact, the two different architectures are being contrasted (*see,* para. 0022-0023) by APA. Additionally, there is no suggestion that the pilot-based phase estimation block 24 gradually switches from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking, as recited in claim 1.

For at least the reasons above, independent claims 1, 10, 11, 20 and 21 as well as the rejected claims depending thereupon are non-obvious over APA. Accordingly, withdrawal of the rejection is respectfully requested.

ii.   **One of ordinary skill in the art would not have been motivated to modify APA with a control system connected to a first system and to a second system gradually switching from a pilot-based phase and frequency tracking to a data based-phase and frequency tracking, as provided in claims 1, 10, 11, 20 and 21.**

The Office Action states that one of ordinary skill in the art would have been motivated to gradually switch from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking instead of switching over abruptly since the residual frequency errors are not completely eliminated. (*See*, p. 5, lns. 10-14). However, the applicant respectfully disagrees that motivation to modify the prior art is present, as will be more fully appreciated below.

The Office Action references paragraph [0024] of the APA as providing motivation for the claimed modification. (*See,* pg. 5, first paragraph). Paragraph [0024] states that "it is desirable to be able to use robust pilot tracking near the beginning of the transmission, but to switch over to data based tracking... [h]owever, this is difficult to achieve in practice due to the error properties of the pilot-based tracking method" (emphasis added). Therefore, the Office Action implies that the motivation to modify the APA teachings is to correct the error properties set forth in paragraph [0024]. **However the APA does not provide a description of how <u>a manner of switching</u> affects the error properties, and consequently, the APA provides no teaching that would motivate one skilled in the art to correct the error properties by switching <u>in a gradual manner</u>.** For example, while the APA references error properties, it does not provide for any teachings which would lead one skilled in the art to relate the manner in which a switching occurs to the error properties. That is, just by knowing the existence or non-existence of a frequency error, for example, one of ordinary skill in the art would not be led to conceive of the idea of **gradually switching** between two difference phase and frequency tracking schemes. Moreover, knowing the existence of a frequency error would not lead one of ordinary skill in the art to **not abruptly switch** from one to another phase and frequency tracking scheme. In particular, **there is no disclosure therein that would suggest to one of ordinary skill in the art the**

abruptness of the switching was the root of the problem, or that an alteration of the manner in which the switching was effectuated would affect the error properties.

Instead the disclosed APA merely provides a statement defining the problem that is addressed by the important aspects that are disclosed in the present invention. Therefore, a person skilled in the art is therefore not prompted to integrate a control system into the technical teaching of the Prior Art in order to provide the claimed gradual switch.

Accordingly, since the APA fails to teach a control system and since the APA does not provide motivation to modify Figure 6, the structure set forth by the APA cannot represent the feature as present in Figure 6 since there is *no (control) element in or motivation to add a control element to figure 6 by which this feature can be performed.* Therefore, withdrawal of the rejection of independent claims 1, 10, 11, 20 and 21 and the claims depending thereupon is respectfully requested.

III.   CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be in condition for allowance.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 50-1733, LLP127US.

Respectfully submitted,
ESCHWEILER & ASSOCIATES, LLC

By   /Thomas G. Eschweiler/
        Thomas G. Eschweiler
        Reg. No. 36,981

National City Bank Building
629 Euclid Avenue, Suite 1000
Cleveland, Ohio 44114
(216) 502-0600